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How Changes in the Former CMEA Area May Affect International Trade in Manufactures

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Western Europe will be the major trading partner of the Eastern European and former Soviet economies, but their trade with Japan, North America, and developing countries will also expand. Eastern Europe's greater access to Western markets may conflict with the export interests of other developing countries.

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This paper — a product of the International Trade Division, International Economics Department — is part of a larger effort in the department to analyze the impact of EC92 and changes in Eastern Europe on global trade patterns. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Grace Ilogon, room S7-033, extension 33732 (September 1992, 51 pages).

Erzan, Holmes, and Safadi give a long-term perspective on how changes in the former CMEA area will affect international trade in manufactures. They show that expanding Eastern European exports to the West should be viewed as a step toward normalizing the Eastern European countries' trade patterns.

First, proportionally less of the Eastern European economies' trade will be with each other, especially with the former Soviet Union. Second, Western Europe will be their major trading partner but their trade with (especially imports from) Japan and North America may increase dramatically (from a small base). Their exports to and imports from developing countries may also change dramatically.

The volume of Eastern European trade is in line with the low income of these economies. In the long run manufactures trade will increase four- to sixfold, once Eastern European income levels catch up with industrial country levels. Until incomes in Eastern European and former Soviet economies increase significantly, labor-intensive goods are likely to dominate their exports to market economies, and sophisticated goods their imports.

Erzan, Holmes, and Safadi contend that, since the end of the Cold War, the West has successfully improved the Eastern European countries' access to Western trade, and that the Eastern European countries should now enjoy equal or favorable treatment. Czechoslovakia, Hungary, and Poland, in particular, may become the "most favored outsiders" in the European Economic Space, the largest single market in the world.

One short-term effect of the Eastern European countries' improved outlook may be that developing countries that rely on manufactures for export revenues may have tougher times in major Western markets. But the emancipation of Eastern European and former Soviet economies — and the pent-up demand for consumer goods likely from deprived populations — should provide important opportunities for the dynamic developing countries.

The former Soviet Union was not a large market for developing countries — except for India and Yugoslavia and to a lesser extent Algeria and Egypt. Countries such as India that did supply the former Soviet Union with manufactures may soon have to seek alternative markets.

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Contents

I. Introduction

Owing to their centrally planned economies, the existence of trade within the Council of Mutual Economic Assistance (CMEA), and managed trade otherwise, the trade patterns of the Eastern European (EE) countries and the former USSR had a distinct profile. Their transition to market economies, dismantling of the CMEA, and dismembering of the USSR are redefining the trade relations among these countries, and between them and the rest of the world. The world is following these developments intensely, with an interest in the impact of these changes on the EE countries' own economic prospects, and their impact on other countries. For other developing countries, any assistance extended to EE and to the former Soviet Union (FSU) will have implications for them. For example, OECD trade concessions will erode the existing preference margins of other developing countries. Further, transfers of financial resources, know-how and technology are scarce commodities.

In the trade area, the most immediate cause of concern is the collapse of intra-CMEA trade.[1] This trade constituted about one-half to three-quarters of total trade for individual EE countries and the FSU.[2] For the shorter-term, the lost CMEA trade has grave consequences, particularly for EE. This

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[1] ECE (1991) estimates that intra-CMEA trade declined sharply in both absolute terms and as a proportion of their total trade. In the first half of 1991 the share of intra-CMEA trade shrunk from 32-34% in the first half of 1990 to 26-29% in EE and from 25-26% to about 21% in the USSR. In absolute terms, intra-CMEA exports declined by 30% in 1990, and their imports declined by 4-5%. ECE projects a further decline of 40% in 1991 (ECE, 1991, Table 2.1.5).

[2] In 1987, this share was 82 percent and 79 percent for Bulgaria's exports and imports, respectively (Hillman and Schnytzer (1991)), and respectively, 75% and 75% for Czechoslovakia; 55% and 48% for Hungary; 42% and 46% for Poland; 37% and 45% for Romania (1985); and 60% and 64% for the USSR. In 1991, intra-CMEA export and import shares of the EE countries dropped sharply to, respectively, 8.9% and 5.6% for Bulgaria; 14.8% and 8.0% for Czechoslovakia; 19.1% and 12.6% for

is because: (i) the EE economies benefitted considerably from preferential terms of trade that provided an implicit subsidy from the FSU (see, e.g., Oblath and Tarr (1991)); (ii) the FSU supplied them with hard currency goods, such as oil, natural gas and raw materials, in exchange for their shabby manufactures; and (iii) most importantly, "... this trading pattern made the capital of the EE enterprise transaction-specific: the capital goods could produce goods that were acceptable specifically for CMEA transactions only" (Hillman and Schnytzer (1991)).

This assessment is generally endorsed, although some EE countries' rapid export expansion to the West in 1990 and 1991 provides some cause for optimism.[3] Consequently, the readiness of a number of OECD countries to back arrangements which would temporarily sustain intra-CMEA trade are certainly worth consideration (see, e.g., Michalopoulos and Tarr (1991)).[4]

This paper offers a **longer-term perspective** by investigating the likely developments in the degree of (apparent) **openness**[5] of the EE economies, as well as the **volume** and **direction** of their trade in manufactures. This exercise is meant to provide a yardstick against which the current shifts in EE trade patterns can be judged. The longer-term scenarios are derived from a **gravity model** built on the

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Hungary; 20.3% and 11.1% for Poland; and 24.6% and 11.5% for Romania (ECE, 1991, Table 2.1.3).

[3] EE's total exports to the West increased by 11.6 percent in 1990, and by 9.2 percent in the first two quarters of 1991 (compared to the same period in 1990) (ECE, 1991, Table 2.1.1). For Bulgaria, Romania and Czechoslovakia, export growth rates in 1990 and 1991 were negative. These were, respectively, -12% and -33% for Bulgaria; -38% and -31% for Romania; and -13% and -6.4% for Czechoslovakia. The expansion in exports came from Hungary, 21% and 23% respectively; and Poland, 40% and 24%.

A recent study by Mueller (1991) shows that Polish enterprises' export performance to the West varied considerably, and that their previous hard currency exports were an important determinant of their performance. Therefore, the "CMEA transaction specific" capital equipment hypothesis cannot be rejected. An implication is however, that a second export boom would be harder to achieve.

[4] Recently, some EC countries have reportedly proposed triangular arrangements, whereby the EC would cover the cost of sending some EE countries' produce to the former USSR (ECE 1991)).

[5] "Apparent" openness measured as the share of imports and exports in GDP. Henceforth, for brevity, the term "openness" will be used in this limited sense.

basic data compiled by Havrylyshyn and Pritchett (1991) whose estimations pertained to the direction of the EE countries' total trade.

Next, the paper makes some tentative observations relating to the **product composition** of trade of the EE countries and the FSU in the **immediate-term**, before there are significant increases in their income levels. This is done by updating Michaely's (1981) "indexes of income levels of exports and imports" for individual product groups, covering a sample of 95 countries in addition to EE and the FSU. The analysis provides an indication of which countries of EE and the FSU might be competing with in international trade.

The paper also addresses an issue which has **immediate implications** not only for the former CMEA area but also for other developing countries, particularly their (potential) competitors in the major industrial markets. After decades of unfavorable treatment in terms of tariff and non-tariff barriers (NTBs) in the West, especially in the US, exports from EE and the FSU will be enjoying equal or even preferential treatment. Czechoslovakia, Hungary and Poland are in the process of concluding an Association Agreement with the EC and free trade agreements with the EFTA countries, which entail some immediate reductions in trade barriers and ultimately their abolition. Thus, the paper compares the levels of **tariffs** and the **incidence** of **NTBs** which faced the exports of the EE countries and the FSU in the EC and US markets with those faced by other developing countries.

Finally, the paper focuses on the potential impact of the disarray in the FSU on manufactured exports of developing countries. If the EE countries had a favorable deal with the FSU in their CMEA trade, then it is obvious that the collapse of this arrangement should be an economic relief for the latter group of Republics. In the present chaotic situation, however, even the hard currency exports of the FSU such as oil and natural gas, both to EE and to the West, are declining.[6] With foreign currency and gold

[6] Total exports of the FSU declined by 18 percent in the first two quarters of 1991 over the same period in 1990 (ECE,1991).

reserves at an all-time low, these Republics will be obliged to limit severely their imports in the immediate future.[7] To highlight this issue, the paper ranks developing countries in terms of their vulnerability in manufactured exports to the FSU.

A concluding section sums up the findings of the study and discusses their implications. An Appendix containing the specifications of the models employed, their descriptive statistics, as well as detailed statistical tables, is available from the authors.

II. Predicting Eastern European Trade in Manufactures: A Longer-Term Perspective

As the starting point, we briefly examine the shares of the EE countries and the FSU global trade in comparison with their shares in world GDP. The valuation problems involved in both these variables concerning this region have long occupied major intelligence agencies of the West, as well as filling several volumes, including some published by the World Bank (e.g., Marer (1985) and World Bank (1991a)). In particular, before 1991, intra-CMEA trade values were denominated in terms of the so-called transferable rouble (TR), which had no objectively determined external value. The indeterminacy of the external value of the TR produced a situation that one source described as a "valuation anarchy: (where) every trade partner entered rouble-denominated trade values into his own trade statistics at a conversion factor of his own choice, with the result that flows of the same rouble magnitude entered international trade data at wildly disparate levels." (ECE, 1991). In order to circumvent this problem, the ECE secretariat recomputed eastern trade values by imposing a common rouble/dollar crossrate on all ex-CMEA intra-trade. The ratio of the adjusted trade figures of the ex-CMEA countries to their reported trade produces a correction factor that we use in order to compute a more consistent "actual" estimate of these countries' total and manufactures trade. Finally, it is important to note that the actual

[7] In fact, in the first two quarters of 1991, the FSU's total imports declined by 41.4% over the same period in 1990 (ECE, 1991).

estimates that are reported here are only meant to convey the degree of distortion in the trade sector of this group of countries, compared to what otherwise would have been a "normal" trading pattern.

Based on the UN Department of International Economic and Social Affairs (DIESA) figures for 1987, the exports of the five EE countries and the USSR, including their intra-trade, made up 6.9% of total world exports and 6.3% of world imports (see Table 1). In manufactures, defined as SITC 5 through 9, the corresponding ratios were 5.4 and 5.8%, respectively. This was roughly in the same range as their share in world GDP -- 7.4% according to World Bank estimates. These tentative figures suggest that, if anything, the trade/GDP ratios of this bloc of countries were somewhat lower than the world average. The problem lies somewhere else, and emerges when we bring in any industrial market economy as a comparator. For example, France, with only a fraction of the combined population of EE and the FSU, accounts for about the same share of world trade (6.4%) but a slightly lower share of world income (5.2%). The major distortion was that over 60% of both total and manufactures trade of EE and the FSU took place among themselves. This ratio was higher than in the EC's intra-trade, which is about 55% in both manufactures and total trade. Furthermore, while for the EC's manufactures sector this integration was largely a result of a market driven integration, for the former CMEA it was the product of what Hillman and Schnytzer (1991) called "creating the reform-resistant dependent economy".

Table 1: Shares of Eastern Europe and the FSU in World Trade and their Trade/GDP Ratios, 1987 (Percent)

Country	Share of World Trade [a]		Ratio of Trade to GDP [b]		Memo Item: World GDP Shares [b]
	Exports	Imports	Exports	Imports	
TOTAL TRADE					
Bulgaria	0.6	0.6	28.8	30.9	0.17
Czechoslovakia	0.9	0.9	42.2	38.8	0.38
Hungary	0.4	0.7	41.0	71.7	0.18
Poland	0.4	0.8	18.7	38.3	0.57
Romania	0.5	0.3	23.6	14.0	0.32
FSU	4.0	3.0	7.6	5.4	5.82
EE5 & FSU	6.9	6.3	12.2	12.2	7.43
World			18.8	18.8	
MANUFACTURES TRADE [c]					
Bulgaria	0.7	0.5	21.7	18.2	
Czechoslovakia	1.1	0.6	37.4	19.4	
Hungary	0.4	0.6	30.3	46.4	
Poland	0.4	0.7	13.1	23.0	
Romania	0.5	0.3	17.3	8.6	
FSU	2.3	3.2	3.2	4.2	
EE5 & FSU	5.4	5.8	7.1	8.3	
World			14.0	14.0	

Notes:

(a) The trade figures are estimates by the Perspective Studies Branch of the Office for Development Research and Policy Analysis, Department of International Economic and Social Affairs (DIESA), United Nations, New York. These estimates are based on the UNSO COMTRADE Data Base and National Sources.

(b) GDP figures are World Bank estimates. Trade figures have been revalued using ECE (1991) correction factors.

(c) Manufactures are defined as SITC 5 through 9.

We now turn to investigating the likely developments in manufactures trade following the restructuring of the former CMEA area. Our approach is based on a best-case scenario, in which the EE countries complete a successful transition and become similar to present-day industrial market economies in three respects: openness, direction of trade and income levels. In other words, our approach involves the decomposition of manufactures exports and imports of EE into three components:

$$T_{ij} = \left[\frac{T_i}{Y_i}\right]\left[\frac{T_{ij}}{T_i}\right]Y_i \qquad (1)$$

where T_{ij} is the US$ value of manufactures exports or imports from country i to country j, T_i is total manufactures exports or imports of country i, and Y_i is its level of income. The first term in equation (1) determines the share of output that is exported or imported which we use as a measure of openness of exports or imports. The second term refers to the share of country i's exports (or imports) that is exported (imported from) to country j, or the direction of trade effect. The last term refers to the income effect.

As the whole exercise is based on the record of the comparator countries, we make no predictions for the FSU whose immense economic potential rules out having a representative country sample from which to derive a measure of openness. Other things equal, the larger a country is, the more it will seem to be generally "closed." For example, U.S. exports in 1990 amounted to only 7% of its GDP.

This section is organized as follows. Part A presents the different scenarios that we use to predict EE trade in manufactures. Parts B and C discuss the estimation techniques used to predict the effects of openness and the direction of trade, as well as the results they generate, and finally, part D contains the aggregate predictions for EE manufactures trade under the different scenarios. Individual country's predictions are contained in the Appendix (available from the authors).

A. The Scenarios

The predictions we draw from the above specification are based on two scenarios regarding the income levels of the EE countries and two sets of comparator countries. The first scenario assumes that the GDP of the individual EE countries remains at their current levels. The second scenario is based on an optimistic view that assumes that the GDP of these countries will catch up with those prevailing in the EC countries.[8]

One could interpret the first scenario as a medium-term scenario in which the long-run benefits of the transformation have not yet materialized. The second scenario could be interpreted as a long-run best-case scenario, and as such provides an upper limit on the magnitude of manufactures trade.

In choosing the two samples of comparator economies, we start from the assumption that, in the long run, the EE countries will come to share features common to market-oriented economies. We rely on the experience of the trade in manufactures with 95 partners of two different samples of economies. The first sample of comparator economies includes 14 relatively large, semi-industrialized economies with substantial non-primary exports [9], while the second includes 21 non-oil exporting countries with per capita income in 1985 between US$ 2,000 and US$ 5,000.[10] The data for these two samples of economies are averaged for the period 1980-82, a period chosen because it characterizes a normal period of trade flows since it pre-dates the debt crisis and the massive dollar movements of the mid 1980s.

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[8] Collins and Rodrik (1991) estimate that in order to reach this goal, the EE countries would need to grow by more than 8% per year for the next 20 years; by 3-3.5% per year just to maintain their current levels relative to the EC; and by an additional 5% per year in order to close the gap between their incomes and those prevailing in the EC.

[9] The countries are: Brazil, Chile, Greece, Ireland, Israel, Korea, Malaysia, Mexico, Portugal, Spain, Thailand, Tunisia, Turkey, and Uruguay.

[10] The economies are: Algeria, Brazil, Chile, Colombia, Costa Rica, Ecuador, Greece, Ireland, Korea, Lebanon, Malaysia, Mexico, Nicaragua, Panama, Peru, Portugal, Syria, Taiwan (China), Turkey, Uruguay and Venezuela. This same group of countries was also used as comparator group by Havrylyshyn and Pritchett (1991).

Since the models used in the estimations that follow are time invariant, the estimated coefficients obtained from the two samples are then applied to actual 1987 EE data in order to predict the direction as well as the volume of EE manufactures trade. Data sources are contained in the Annex.

Finally, it is important to note that our predictions for the volume of trade have an upward bias. This is so because had EE not separated itself from the international trading community, our two samples of comparator countries would have traded more with EE and less with the rest of the world. In other words, the comparator countries' observed trade with the rest of the world is biased upward, and hence any predictions based on these estimates would be, *a fortiori*, biased upwards.

B. Degree of Openness

In order to predict the degree of openness of the EE countries, we begin by regressing the degree of openness of the two comparator samples on their income level, population and other variables. Specifically, the estimated equation is :

$$(2) \qquad \frac{T_i}{Y_i} = a + \beta_1 Log\, Y_i + \beta_2 Log\, POP_i + \beta_3 TSHARE_i + \beta_4 Log\, AREA_i + \sum_{k=1}^{5} \alpha^k REGION_k$$

where POP_i refers to the population of country i, $TSHARE_i$ is a dummy variable that refers to the export or import share in GDP in country i.[11] $AREA_i$ refers to the land area of country i in square kilometers, and separate dummy variables are included for the 5 different regions: EC, EFTA, CACM, LAFTA and ASEAN.

[11] This dummy variable assumes the value of 1 if the share is larger than .4, otherwise it is set to zero.

Our statistical models have a reasonable fit, and all four of our specified equations explain more than 80 percent of the variation in openness across countries.[12] The estimated parameters of equation (2) were then applied to data on income, population and area of the EE countries to derive predictions on their openness. The predictions for the five EE countries are presented in Tables 2 and 3 below.

Table 2: Eastern Europe's Manufactures Export-GDP Ratios, Actual and Predicted (Percent)

Country	Estimated Actual Shares [e]	Predicted Shares			
		Medium Run [a]		Long Run [b]	
		(1) [c]	(2) [d]	(1) [c]	(2) [d]
Bulgaria	22	22	17	23	20
Czechoslovakia	37	22	20	23	22
Hungary	30	23	19	24	22
Poland	13	18	19	19	22
Romania	17	19	17	20	21

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $ 5000.
(e) Based on World Bank estimates.

[12] The estimated coefficients and other statistics are reported in the Annex.

Table 3: Eastern Europe's Manufactures Import-GDP Ratios, Actual and Predicted (Percent)

Country	Estimated Actual Shares [e]	Predicted Shares			
		Medium Run [a]		Long Run [b]	
		(1) [c,f]	(2) [d]	(1) [c,f]	(2) [d]
Bulgaria	18	29	31	29	35
Czechoslovakia	19	28	31	28	34
Hungary	46	30	31	30	36
Poland	23	24	25	24	30
Romania	9	25	26	25	31

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $ 5000.
(e) Based on World Bank estimates.
(f) The shares in the medium and long runs were identical in this case since the estimated coefficient of GDP was not significant.

On the export side, the openness of only Poland and Romania will increase. The share of imports in GDP will likely increase in all countries in the region except Hungary. Therefore, on balance, ex-CMEA trading arrangements appear to have inhibited trade. Moreover, the estimated export shares are lower than the import ones. This implies that the ECE countries are predicted to run a trade deficit of roughly 6-8% of GDP.

Finally, the choice of the sample countries on which the predictions are based do not seem to make much difference concerning openness.

C. Direction of Trade

In predicting the direction of trade effect we rely on a gravity-type equation. Gravity models have been applied successfully to different types of flows, such as migration, commuting, recreational traffic, and interregional and international trade. Typically, the log-linear equation specifies that a flow from origin i to destination j can be explained by supply conditions at the origin, by demand conditions at the destination and by economic forces either assisting or resisting the flow's movement.[13]

In its basic form, the equation is written as:

$$T_{ij} = \beta_0 (Y_i)^{\beta_1} (Y_j)^{\beta_2} (D_{ij})^{\beta_3} (A_{ij})^{\beta_4} \epsilon_{ij} \tag{3}$$

where T_{ij} is the US$ value of the flow from country i to country j, Y_i and Y_j are, respectively, nominal GDP in country i and country j expressed in US$, D_{ij} is the distance from the economic center of i to that of j, A_{ij} is any other factor either assisting or resisting trade between i and j, and ϵ_{ij} is a log-normally distributed error term with $E(\ln \epsilon_{ij}) = 0$.

The most relevant applications of the gravity equation in the present context are those that used it to quantify the trade effects of integration. [14] Our approach is closely related to that of Pelzman (1977), and Havrylyshyn and Pritchett (1991). Pelzman investigated the trade-creation and trade-diversion effects of the creation of the CMEA. He chose a pre-integration period on the basis of which

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[13] Tinbergen (1962) and Pöyhönen (1963a,1963b) were the first to apply the gravity equation to models of bilateral trade flows (see Deardoff (1984) for a survey). Their model was later extended and applied to different contexts in bilateral trade by Linnemann (1966), Aitken (1973), Hewett (1976), Pelzman (1977), Sapir (1981), and Brada and Mendez (1983,1985). The equation has been justified theoretically by Leamer and Stern (1970), Anderson (1979), and Bergstrand (1985, 1989). In fact, Linnemann (1966) asserts that the gravity equation can be derived from a four-equation partial equilibrium model of export supply and import demand, where prices are excluded since they merely adjust to equate supply and demand. This approach, however, has been criticized by Anderson (1979) and Leamer and Stern (1970).

[14] These applications include Tinbergen (1962), Aitken (1973), Hewett (1976), Havrylyshyn and Pritchett (1991) and Pelzman (1977).

equation (3) was estimated. The estimated parameters were then used to predict intra-CMEA trade during the post-integration period. The excess of actual intra-CMEA trade over the predicted volume of trade is attributed to the effect of integration.

Havrylyshyn and Pritchett investigated the change in the geographic direction of total trade following the dismantling of the CMEA. Their specified equation is:

$$
\begin{aligned}
T_{ij} &= \beta_1 (distance_{ij}) + \beta_2 (border_{ij}) + \gamma_{1^1} GDP_i \\
&\quad + \gamma_{1^2} GDPPC_i + \gamma_{1^3} Area_i + \gamma_{1^4} Island_i \\
&\quad + \gamma_{2^1} GDP_j + \gamma_{2^2} GDPPC_j + \gamma_{2^3} Area_j \\
&\quad + \gamma_{2^4} Island_j + \beta_3 \{ | GDPPC_i - GDPPC_j | \} \\
&\quad + \sum_{k=1}^{5} \alpha^k Region_K + \sum_{l=1}^{4} \delta^l Language_l
\end{aligned}
\tag{4}
$$

where T_{ij} refers to bilateral non-fuel import and export values in US$. The US$ per capita GDPs at purchasing power parity for the reporter and the partner countries are included in order to capture the effects of each country's level of development. The two variables -distance between countries and the corresponding absolute difference in per capita GDPs (at purchasing power parity)- capture the Linder hypothesis (1961) that the intensity of bilateral trade in manufactures is determined by similarities in demand structures, and geographical distance between importing and exporting countries. The former refers to the distance between the economic centers of the two countries, and the latter is a proxy for economic similarity. The size of each country is measured by area in square kilometers, and separate dummy variables are included for islands and the existence of a common border. Separate dummy

variables are also included when necessary for the EC, EFTA, LAFTA, ASEAN and CACM.[15] Finally, a language dummy variable is included as a proxy for cultural similarities. It assumes the value of one if the countries share a common language, otherwise its value is set to zero; separate dummy variables are included for English, Spanish, Portuguese and Arabic.

We apply Havrylyshyn and Pritchett's specified equation (equation 4) to our two samples using our two income level scenarios. The estimated coefficients are then used to predict what would have been the direction of the EE countries' trade in manufactures had these countries obeyed the same rules as those prevailing in the two samples.

Since the values of bilateral trade are only observed for nonnegative values, ordinary least squares estimates will be inconsistent.[16] Therefore, we use the Tobit maximum likelihood estimation technique [17]. Furthermore, in predicting the direction of trade effect, we follow McDonald and Moffit's (1980) methodology in interpreting and using the estimated Tobit coefficients. They show that:

$$E(y_i) = \Phi_i \beta' x_i + \sigma \phi_i \tag{5}$$

where ϕ_i and Φ_i are the density function and distribution function of the standard normal evaluated at $\beta' x_i/\sigma$, and σ is the standard error of estimation. Tables 4 and 5 below present the results.

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[15] For example, Aitken (1973) found European trade to be significantly influenced by membership in the EC or EFTA and by being neighbors. Srivastava and Green (1986) found cultural similarity, political circumstances, economic union and former colonial status to be significant determinants of trade between nations.

[16] See for example Maddala (1983) for a discussion of the bias in OLS estimates in models with limited dependent variables.

[17] See Tobin (1958) and Heckman (1976,1979) for a discussion and application of this technique.

Table 4: Direction of Eastern Europe's Exports of Manufactures, Actual and Predicted (Percent)

Partner Group	Actual	Predicted Direction of Trade			
		Medium Run [a]		Long Run [b]	
		(1) [c]	(2) [d]	(1) [c]	(2) [d]
European Community	13	31	29	27	26
EFTA	4	15	26	12	22
East European Five	17	7	9	10	13
Other EE [e]	57	5	8	6	9
North America	2	9	6	7	5
Japan	0	3	2	3	2
Other Developed	1	4	3	4	3
Sub-Total, Developed	94	74	83	69	80
N.Africa & M.E.	5	9	6	10	6
Asia & Pacific	1	8	5	9	6
S. & C. America	1	6	4	8	5
Sub-Saharan Africa	0	3	2	4	3
Sub-Total, Developing	7	26	17	31	20
Total, All Groups [f]	100	100	100	100	100

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $5000.
(e) This includes Yugoslavia, former East Germany and the Soviet Union.
(f) Total does not necessarily add up to 100 due to rounding.

Table 5: Direction of Eastern Europe's Imports of Manufactures, Actual and Predicted (Percent)

Partner Group	Actual	Predicted Direction of Trade			
		Medium Run [a]		Long Run [b]	
		(1) [c]	(2) [d]	(1) [c]	(2) [d]
European Community	20	26	26	23	22
EFTA	5	10	16	9	13
East European Five	19	5	7	7	9
Other EE [e]	53	4	6	5	8
North America	1	22	20	18	17
Japan	1	5	5	4	4
Other Developed	0	3	3	4	3
Sub-Total, Developed	99	75	83	70	76
N.Africa & M.E.	0	7	5	9	7
Asia & Pacific	1	8	7	10	9
S. & C. America	0	5	4	7	5
Sub-Saharan Africa	0	3	2	5	4
Sub-Total, Developing	1	23	18	31	25
Total, All Groups [f]	100	100	100	100	100

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $ 5000.
(e) This includes Yugoslavia, former East Germany and the Soviet Union.
(f) Total does not necessarily add up to 100 due to rounding.

The most remarkable of the predicted shifts in the direction of manufactures trade is away from the former CMEA area to the EC and EFTA countries. This follows closely Havrylyshyn and Pritchett's (1991) results concerning total trade. Exports of the five EE countries to each other, to the FSU and to Yugoslavia and to former East Germany, which together accounted for over 70 percent of their manufactures exports, would drop to around 20 percent under all scenarios. These results are biased upwards because: first, East Germany has since merged with West German. Second, our predictions have an upward bias since they were based on the observed manufactures trade of the comparator countries which traded more with the rest of the world and less with the CMEA due to the internal and external arrangements of the latter. Third, and most importantly, our predictions do not take into account that the CMEA was an economic union that shared a common second language (Russian) and extended to its members preferential treatment, barter and clearance arrangements. If some of these elements are carried over to the new era, they could considerably affect their intra-trade.

The model predicts that the importance of Japan, North America and the developing countries would increase in importance as markets for EE exports of manufactures. The picture on the import side is quite similar. A major difference is that North America is predicted to become even much more important as a source of imports to the EE than as a market for EE exports.

D. Expansion of Manufactures Trade

Tables 6 and 7 below give the volume of trade effect, which is the result of a combination of changes in openness, in direction of trade and in income. Excluding the last-mentioned effect, it is predicted that EE exports of manufactures would shrink 25 to 30 percent while imports would expand by 15 to 20 percent. With the income effect factored in, exports would increase four-fold and imports five- to six-fold over their current levels. By comparison, these predicted volumes are 25 percent of the EC's present trade volume (including intra-EC trade) on the export side and 35 to 45 percent on the

import side. These predictions for both the medium and longer-run yield a deficit in manufactures trade. This outcome has more to do with the trade balances of the comparator countries rather than with any fundamental reason why these countries would experience such a deficit. Almost all countries in both of the comparator samples experienced a deficit in their manufactures trade in the period 1980-82.[18] Nonetheless, in 1988, the EE countries actually experienced a deficit in their manufactured trade with the West equal to US$2.4 billion.

[18] The 14-country sample of semi-industrialized countries had a combined deficit in the period 1980-82 equal to US$26 billion, and those in the 21-country sample had a combined deficit of US$38 billion.

Table 6: Volume of Eastern Europe's Exports of Manufactures, Actual and Predicted (Million US$)

Partner Group	Actual Exports (M US$)	Predicted Volume of Exports (M US$)			
		Medium Run [a]		Long Run [b]	
		(1) [c]	(2) [d]	(1) [c]	(2) [d]
European Community	6,832	13,423	12,104	54,367	55,389
EFTA	1,863	5,994	7,214	23,082	31,730
East European Five	8,971	2,750	3,667	18,924	27,952
Other EE [e]	30,661	2,204	3,333	12,476	20,445
North America	1,003	3,864	2,658	15,132	12,449
Japan	207	1,289	930	5,038	4,441
Other Developed	480	1,599	1,175	7,618	6,420
Sub-Total, Developed	49,014	31,123	31,081	136,637	158,826
N.Africa & M.E.	2,723	3,576	2,308	19,280	13,912
Asia & Pacific	626	3,151	2,210	17,166	13,162
S. & C. America	341	2,690	1,750	16,540	11,665
Sub-Saharan Africa	122	1,398	874	8,708	5,906
Sub-Total, Developing	3,812	10,815	7,142	61,694	44,645
Total, All groups	53,826	41,938	38,223	198,331	203,471

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $ 5000.
(e) This includes Yugoslavia, former East Germany and the Soviet Union.

Table 7: Volume of Eastern Europe's Imports of Manufactures, Actual and Predicted (Million US$)

Partner Group	Actual Imports (M US$)	Predicted Volume of Imports (M US$)			
		Medium Run [a]		Long Run [b]	
		(1) [c]	(2) [d]	(1) [c]	(2) [d]
European Community	9,050	14,290	15,401	54,313	66,400
EFTA	2,486	5,471	7,479	19,651	31,409
East European Five	8,971	2,739	3,879	16,114	26,928
Other EE [e]	24,631	2,146	3,346	12,429	24,670
North America	348	12,231	12,239	44,206	53,825
Japan	446	2,641	2,812	9,580	12,373
Other Developed	91	1,788	1,652	8,124	9,553
Sub-Total, Developed	46,023	41,306	46,808	164,417	225,158
N.Africa & M.E.	121	3,857	3,035	20,969	21,254
Asia & Pacific	228	4,462	4,354	23,245	28,246
S. & C. America	91	2,833	2,130	17,857	17,520
Sub-Saharan Africa	0	1,689	1,325	10,889	11,229
Sub-Total, Developing	440	12,841	10,844	72,960	78.249
Total, All groups	46,463	54,147	57,652	237,377	303,407

Notes:
(a) Based on current (1987) GDP.
(b) Based on projected GDPs for EE countries.
(c) Based on the sample of 14 relatively large semi-industrialized countries.
(d) Based on the sample of 21 non-oil exporting countries with per capita GDP in 1985 between US$ 2000 and $ 5000.
(e) This includes Yugoslavia, former East Germany and the Soviet Union.

III. Predicted Changes in the Export Composition of Eastern Europe and the Former Soviet Union

In this section we investigate the likely medium-term developments in the commodity composition of EE manufactures trade. The methodology adopted here follows that of Michaely (1981). Michaely developed a measure to assess the structure of trade where each commodity (or a group of commodities) is associated with a weighted average of the per capita incomes of the countries which trade in that commodity. This exercise enables each commodity to be characterized by "representative" per capita income levels, both as an export and as an import. Specifically, the income level of world exports (imports) of good i, y_i^x (y_i^m) is defined by the following:

(6) $$y_i^x = 100 \sum_j \frac{Y_j}{Y_u} \frac{X_{ij}}{X_{i.}}, \qquad \textit{where}$$

Y_j = per capita GDP of country j; and

Y_u = US per capita GDP (to serve as a numeraire).

X_{ij} = exports of good i by country j

$X_{i.}$ = world exports of good i

The value of the index as defined here ranges between 0 and 100, with 100 as the income level of exports of a good exported exclusively by the numeraire country (the United States). Michaely has shown that this single index captures well the conventional attributes of goods such as their capital and skill intensities. We computed this index at the 3-digit level of the SITC, based on a sample of 95 non-socialist countries' trade in 1987.[19]

Having at our disposal the index of income level of trade of each product group, we may now move back to the trade of a country, and inquire about the income level of the goods traded by the

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[19] These indices for 120 product groups are given in the Appendix and are available from the authors. They can be used for making more specific trade projections concerning the EE countries and the FSU.

country: does the country trade in high income level goods or in low-level goods? This index, the income level of a country's exports (imports) y_j^x (y_j^m), is defined as:

(7) $$y_j^x = \sum_i \frac{X_{ij}}{X_j} y_i^x, \qquad \textit{where}$$

X_{ij} = exports of good i by country j;

X_j = total exports of country j; and

y_i^x = index of income level of exports of good i.

For each country, the indices of income level of exports and imports were calculated for total trade and trade in manufactures only. In the case of the five EE countries and the FSU, we had to use their trade with the 95 countries in our sample (which excludes their intra-trade). Columns 1 and 5 in Table 8 give these aggregate indices for the five EE countries and the FSU.[20] For exports of manufactures, they were in the range of 60 to 66 (for total exports, 54 to 63). On the import side, the indices had a narrower range around 60. To interpret these results, we need to compare them with the indices obtained for the other countries, taking into account the income level of each country. Thus, following Michaely, we estimated the equation below for exports and imports (for both manufactures and total trade):

(8) $$y_j^{-x} = \alpha + \beta y_j, \qquad \textit{where}$$

y_j^{-x} = expected income level of country j's exports, and

y_j = per capita GDP of country j (as a percentage of the US income level).

[20] Given in the Appendix for all 101 countries in the sample, available from the authors.

Based on the α and β coefficients obtained from ordinary least squares estimation, we computed the predicted values for the indices, given in columns 2 and 6 of Table 8.[21] Dividing the actual value for each country by their predicted index, we ranked the 101 countries in the sample in descending order of this ratio (columns 4 and 8). In manufactures exports, all five EE countries and the FSU had a ratio of one or above, and they appeared among the first 50 countries except (Romania 56). The import side was the mirror image of exports: all ratios were less than one, and the six countries ranked near the bottom of the scale. When exports of all goods were considered, this pattern was even more pronounced (less pronounced in the case of imports).

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[21] Manufactures: (t statistics in parentheses, all significant at the 0.01% level).

$$y_j^{-x} = \underset{(72.82)}{57.21} + \underset{(5.96)}{0.13}\, y_j \quad \overline{R^2} = 0.26 \quad F\ value = 35.53$$

$$y_j^{-m} = \underset{(295.18)}{61.40} + \underset{(8.55)}{0.05} y_j \quad \overline{R^2} = 0.42 \quad F\ value = 73.15$$

All goods:

$$y_j^{-x} = \underset{(39.24)}{44.43} + \underset{(7.32)}{0.24}\, y_j \quad \overline{R^2} = 0.35 \quad F\ value = 53.59$$

$$y_j^{-m} = \underset{(262.74)}{59.51} + \underset{(10.97)}{0.07}\, y_j \quad \overline{R^2} = 0.54 \quad F\ value = 120.40$$

Table 8: Michaely's Index of Income Level of Exports and Imports of Manufactures [a]
(Figures in parentheses refer to all goods)

Country	Exports				Imports			
	Actual [b] (1)	Predicted [c] (2)	1/2 [d] (3)	Country Rank [e] in (3)	Actual [b] (1)	Predicted [c] (2)	1/2 [d] (3)	Country Rank [e] in (3)
Bulgaria	61.7 (58.9)	59.0 (47.5)	1.05 (1.24)	31 (10)	60.2 (59.3)	62.1 (60.4)	0.97 (0.98)	94 (76)
Czechoslovakia	62.6 (62.6)	59.5 (48.4)	1.05 (1.29)	29 (5)	60.3 (59.9)	62.3 (60.7)	0.97 (0.99)	98 (72)
Hungary	60.5 (58.9)	58.8 (47.2)	1.03 (1.25)	39 (8)	60.6 (60.5)	62.0 (60.3)	0.98 (1.00)	85 (52)
Poland	59.9 (61.7)	58.6 (47.0)	1.02 (1.31)	41 (2)	60.7 (59.1)	61.9 (60.3)	0.98 (0.98)	81 (79)
Romania	58.6 (56.6)	58.5 (46.7)	1.00 (1.21)	56 (13)	60.6 (59.0)	61.9 (60.2)	0.98 (0.98)	83 (78)
FSU	66.0 (54.3)	58.5 (46.7)	1.13 (1.16)	10 (16)	60.6 (57.8)	61.9 (60.2)	0.98 (0.96)	84 (93)

Notes:
(a) Michaely's (1981) indices (updated) using 1987 GDP per capita figures and trade flows at the 3-digit level of SITC. Following Michaely, the US GDP per capita is taken as the numeraire. The aggregate country indices are computed based on the indices for individual product groups (see the text for computational details). Manufactures are defined as SITC 5 through 9.
(b) Based on the trade of the EE countries and the FSU with the market economies.
(c) The estimation is based on a sample of 95 in addition to the five EE countries and the FSU.
(d) The ratio is based on indices with four decimal points.
(e) Rank order of each country's ratio of actual over predicted values in the 101 country sample, in descending order.

These results indicate that the manufactured exports of the EE countries and the FSU to the market economies were, on average, higher income goods in comparison with their current income levels, and the opposite seems to hold for their manufactured imports. Given that the country aggregations for the EE five and the FSU are based on their trade with the market economies only (i.e., excluding intra-CMEA trade), the results are not representative of their overall trade. However, regardless of the income level of their intra-trade in the past, it can be speculated that, as a result of restructuring, the EE countries and the FSU will be expanding their manufactured exports to the market economies more in relatively lower-income goods. In turn, they should be importing more in higher-income goods.

The more pronounced results concerning exports of all goods (compared to manufactures only) stems from the fact that the EE and the FSU had very little in the way of exports of agricultural goods to the market economies. This is again an area where we should see increased activity, at least concerning EE.

We should note that the results in this section are very sensitive to the income estimates for EE and the FSU. Had we adopted higher income estimates, their predicted composition of trade would more closely match their actual pattern. By the same token, the results are sensitive to longer-term developments, i.e., the speed at which these countries' income levels catch up to those of the industrial market economies.

Exports of Textiles and Clothing

In a recent paper, Erzan and Holmes (1991) analyzed the textiles and clothing exports of the five EE countries to the EC and the United States. Their results, based on the capital intensity of textile products at a detailed level (using US manufacturing industry data as a proxy), corroborate the results reported above. A conclusion drawn by Erzan and Holmes was that the average capital intensity of EE's exports of textiles and clothing was high -- in relation to observed endowments in these countries. It was

argued that the Multi-Fibre Arrangement (MFA) quotas and the weak adjustment mechanisms of centralized economic systems had likely inhibited EE's expansion of relatively more labor-intensive products.

IV. Tariff and Non-Tariff Barriers Facing Exports of Eastern Europe and the FSU, and Export Prospects

By comparison with other countries, EE and the FSU were treated unfavorably by the West -- in terms of both tariffs and non-tariff barriers (NTBs). This section focuses on the EC and US markets, and documents this unfavorable treatment in comparison to exports from other industrial and industrializing countries. We also discuss the recent improvements in market access for the EE countries and the FSU and the prospects for preferential treatment, particularly by the EC.

A. Tariffs

As a result of subsequent GATT rounds, the Most Favored Nation (MFN) tariff rates on manufactures in industrial market economies have come down to about 4 percent on average. However, the FSU did not have MFN status, neither in the EC nor in the US, and hence was subject to "general" rates which were considerably higher than MFN tariffs. This was also the case for Bulgaria and Czechoslovakia in the US. Poland's MFN status in the US was suspended in 1981 (restored in 1989), and that of Romania was suspended in 1988 (Table 9).

Furthermore, with the exception of Romania and Hungary, most industrial market economies excluded EE and the FSU from the Generalized System of Preferences (GSP) which provides lower tariff rates to developing countries in most industrial products.[22]

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[22] GSP schemes are unilaterally granted by industrial countries. All of these schemes exclude major textile and clothing products and other items in which developing countries have a pronounced comparative advantage (see, e.g., Erzan and Karsenty (1989)).

Tables 10 and 11 give the trade weighted average tariffs for the five EE countries and the FSU in the EC and US, by major product groups as they existed before 1991. Tariffs facing all developing countries, the newly industrialized countries (NICs), and all suppliers to those markets are also tabulated for comparison purposes.

The average tariff facing the five EE countries in manufactures was 6 percent in the EC. This compared unfavorably with the overall average for developing countries, 2.5 percent, and for NICs, 5.2 percent. In the US market, the difference was much more pronounced. While the average for the developing countries was 6.9 percent, and for NICs, 8.4 percent, the EE average was 14 percent. For the EE countries which did not have MFN status in this market, the average tariff rate in manufactures was close to 30 percent. In textiles and clothing, for example, the rate was over 50 percent.

Tariffs facing the FSU in the EC could not be computed as the data on general tariffs in this market are not readily available in computerized form. In the US market, however, the FSU faced an average tariff of 44 percent in textiles and clothing, 9 percent in non-electric machinery, and 30 percent in transport equipment. The overall average for manufactures was, however, only 3 percent owing to the fact that chemicals, notably nitrogenous fertilizers -- with a major share in the FSU's manufactures export basket -- faced negligible tariffs.

Table 9: MFN and GSP Status of Eastern Europe and the FSU in the EC and US Markets

Country	EC Market		US Market	
	MFN	GSP	MFN	GSP
Bulgaria	Yes	Yes (as of 1991)	No (proposal in US Congress)	No (may be tied to MFN)
Czechoslovakia	Yes	Yes (as of 1991)	Yes (as of 1990)	Yes (as of 1990)
Hungary	Yes	Yes (as of 1990)	Yes	Yes
Poland	Yes	Yes (as of 1990)	Yes (suspended 1981,restored 1989)	Yes (suspended 1981,restored 1989)
Romania	Yes	Yes	(suspended 1988)	(suspended 1988)
FSU	No	No	No (proposal in US Congress)	No (may be tied to MFN)

Note: MFN = Most Favored Nation; GSP = Generalized System of Preferences.
An unqualified "yes" entry means that the country in question enjoyed the status without interruption in the 1980s. The exact initiation dates require further investigation.

Table 10: Trade-Weighted Average Tariff Rates in the EC Market, by Product Group [a] (Percent)

Country	Foods & Feeds	Agricultural Materials	Coal & Petroleum	Ores & Metals	Manufactured Goods	Textiles & Clothing	Nonelectric Machinery	Electrical Machinery	Transport Equipment	ALL GOODS
Bulgaria	15.2	2.8	2.2	4.1	6.4	11.4	4.8	5.4	8.4	6.3
Czechoslovakia	11.9	0.3	2.2	1.6	7.4	11.1	5.4	5.5	9.6	6.0
Hungary	8.8	0.8	3.9	5.2	6.3	9.8	4.6	5.7	5.5	6.1
Poland	8.6	0.3	2.5	0.6	7.3	11.5	5.3	6.6	8.7	4.9
Romania	8.2	0.0	0.0	7.1	2.6	0.0	3.0	0.1	0.0	1.9
EE5	9.4	0.4	1.3	2.2	6.0	7.2	4.8	5.1	6.5	4.7
FSU [b]	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
NICs [c]	16.3	1.0	0.0	0.1	5.2	5.7	3.3	5.5	3.3	5.3
LDCs [c]	3.3	0.4	0.1	0.1	2.5	2.3	2.3	3.6	1.1	1.4
World	4.4	0.4	0.3	0.3	3.3	2.3	2.7	4.8	4.8	2.4

Sources: UNCTAD Data Base on Trade Control Measures and the GATT Tariff Study.

Notes:

(a) Computed using 1986 trade flows and tariff rates, including any GSP rates in effect in that year. The product groups listed here are standard UN aggregates defined in SITC Rev. 1 as follows: Foods & Feeds (0+1+22+4), Agricultural Materials (2-22-27-28), Coal and Petroleum (3), Ores and Metals (27+28+68), Manufactured Goods (5+6+7+8-68), Textiles and Clothing (26+65+84), Nonelectric Machinery (71), Electrical Machinery (72), Transport Equipment (73).

(b) Computations cannot be made for the FSU as it was subject to the general (non-MFN) tariff rates in 1986 which are excluded from the GATT Tariff Study.

(c) "NICs" include China, Hong Kong (China), South Korea and Singapore. "LDCs" are all countries except OECD members, the East European Five and the FSU.

Table 11: Trade-Weighted Average Tariff Rates in the US Market, by Product Group [a] (Percent)

Country	Foods & Feeds	Agricultural Materials	Coal & Petroleum	Ores & Metals	Manufactured Goods	Textiles & Clothing	Nonelectric Machinery	Electrical Machinery	Transport Equipment	ALL GOODS
Bulgaria [b]	23.1	18.7	1.2	48.0	27.7	57.4	27.5	23.5	30.9	16.6
Czechoslovakia [b]	11.2	1.8	0.0	5.0	25.5	52.1	35.0	21.1	32.7	21.8
Hungary [b]	2.8	0.9	0.0	3.2	9.8	20.5	3.6	3.6	4.1	7.5
Poland [b]	4.1	10.3	0.0	5.0	29.9	51.4	35.0	30.7	32.1	14.2
Romania [b]	3.8	3.4	0.5	0.1	8.8	18.9	0.0	0.0	0.3	4.1
EE5 [b]	6.0	3.3	0.5	1.2	14.0	25.6	13.8	16.2	29.1	8.0
FSU [b]	69.0	0.4	2.1	0.3	3.1	43.7	9.1	3.5	30.4	4.6
NICs [c]	3.9	2.1	0.6	3.3	8.4	18.7	3.5	3.4	4.3	8.1
LDCs [c]	2.9	1.2	0.7	0.3	6.9	17.2	2.9	3.4	3.5	5.1
World	3.0	0.8	0.7	0.5	4.4	16.1	2.6	3.8	2.3	3.6

Sources: UNCTAD Data Base on Trade Control Measures and U.S. Department of Commerce trade tapes.

Notes:

(a) Computed using 1986 trade flows and tariff. The product groups listed here are standard UN aggregates defined in SITC Rev. 1 as follows: Foods & Feeds (0+1+22+4), Agricultural Materials (2-22-27-28), Coal and Petroleum (3), Ores and Metals (27+28+68), Manufactured Goods (5+6+7+8-68), Textiles and Clothing (26+65+84), Nonelectric Machinery (71), Electrical Machinery (72), Transport Equipment (73).

(b) Computations for the East European Five and the FSU are based on total customs charges as obtained from the U.S. Department of Commerce trade tapes. Of these countries, only Hungary and Romania received MFN treatment in 1986. Computations for NICs, LDCs and World are based on the UNCTAD Data Base.

(c) "NICs" include China, Hong Kong (China), South Korea and Singapore. "LDCs" are all countries except OECD members, the East European Five and the FSU.

B. Non-Tariff Barriers

Olechowski and Yeats (1982) show that industrial market economies applied NTBs to the exports of the EE countries and the FSU with a higher frequency than to any other country group, and the types of barriers employed are among those generally considered most restrictive (i.e., quotas, variable levies, discretionary licensing schemes, etc.). While their data was for the mid 1970s, this tendency continued throughout the late 1980s, as shown in Tables 12 and 13 which provide information on the EC and US markets. The pattern was quite similar to that of tariffs. A major difference for the FSU was in the US market where its exports of chemicals were subject to anti-dumping duties. In the EC, the overall NTB incidence was low, owing to the FSU's significant exports of precious stones and chemicals which were not subject to NTBs. In addition to quotas on textiles and clothing, the EE countries' exports of a variety of manufactured products, notably iron and steel, were subject to licensing and quantitative restrictions.

In textiles and clothing, all EE countries except Bulgaria were subject to MFA quotas in both the EC and the US. Moreover, Bulgaria and the FSU, although never formally a party to the MFA, faced similar quotas in both markets. The recent study by Erzan and Holmes (1991) has shown that while these quotas were often underutilized in the US, they were effective constraints on EE exports in the EC.

Table 12: Percentage of Trade Covered by Non-Tariff Barriers in the EC Market, by Product Group [a]
(Hard-core NTB coverage ratios in parentheses)

Country	Foods & Feeds	Agricultural Materials	Coal & Petroleum	Ores & Metals	Manufactured Goods	Textiles & Clothing	Nonelectric Machinery	Electrical Machinery	Transport Equipment	ALL GOODS
Bulgaria	67.2 (63.9)	1.0 (0.2)	0.0 (0.0)	10.0 (0.0)	52.7 (49.4)	79.6 (79.1)	0.0 (0.0)	35.0 (0.0)	0.0 (0.0)	38.9 (36.3)
Czechoslovakia	62.3 (59.8)	0.6 (0.0)	0.0 (0.0)	12.9 (0.0)	37.2 (29.1)	82.6 (75.9)	0.0 (0.0)	48.4 (0.0)	0.0 (0.0)	30.1 (23.9)
Hungary	71.4 (62.8)	5.7 (0.2)	0.0 (0.0)	30.3 (0.0)	30.0 (22.0)	66.6 (63.7)	0.0 (0.0)	48.7 (0.0)	0.0 (0.0)	39.8 (31.1)
Poland	47.4 (39.2)	5.7 (0.0)	0.0 (0.0)	4.1 (0.0)	33.9 (21.4)	82.5 (79.9)	15.0 (0.0)	24.0 (0.0)	0.0 (0.0)	23.4 (16.1)
Romania	76.8 (67.7)	25.4 (2.5)	0.0 (0.0)	61.6 (0.0)	41.4 (33.3)	90.9 (84.8)	33.3 (0.0)	61.7 (0.0)	0.0 (0.0)	26.9 (19.4)
EE5	61.1 (53.6)	6.2 (0.4)	0.0 (0.0)	16.1 (0.0)	37.0 (28.3)	82.8 (78.0)	6.6 (0.0)	43.2 (0.0)	0.0 (0.0)	29.5 (22.5)
FSU	34.2 (33.6)	0.1 (0.0)	0.0 (0.0)	2.5 (0.0)	10.4 (0.0)	0.0 (0.0)	38.9 (0.0)	21.5 (0.0)	0.0 (0.0)	1.8 (0.4)
NICs [b]	20.8 (20.7)	3.3 (0.2)	0.0 (0.0)	0.0 (0.0)	35.0 (27.9)	88.7 (88.7)	0.6 (0.0)	4.4 (0.0)	0.0 (0.0)	33.8 (27.0)
LDCs [b]	28.5 (25.7)	3.2 (0.6)	0.0 (0.0)	1.9 (0.0)	33.0 (24.7)	75.0 (72.6)	15.0 (0.0)	11.8 (0.0)	6.4 (0.0)	15.3 (12.1)
World	40.2 (28.1)	2.6 (0.3)	0.0 (0.0)	1.8 (0.0)	18.6 (12.7)	57.4 (54.8)	49.1 (8.3)	21.7 (5.7)	78.2 (77.8)	15.2 (10.3)

Source: UNCTAD Data Base on Trade Control Measures.

Notes:
(a) The coverage ratios were computed using 1989 NTB data against 1986 trade flows. Hardcore NTBs are mainly quantitative restrictions, flexible import fees or variable levies. The product groups listed here are standard UN aggregates defined in SITC Rev. 1 as follows: Foods & Feeds (0+1+22+4), Agricultural Materials (2-22-28), Coal and Petroleum (3), Ores and Metals (27+28+68), Manufactured Goods (5+6+7+8-68), Textiles and Clothing (26+65+84), Nonelectric Machinery (71), Electrical Machinery (72), Transport Equipment (73).
(b) "NICs" include China, Hong Kong (China), South Korea and Singapore. "LDCs" are all countries except OECD members, the East European Five and the FSU.

Table 13: Percentage of Trade Covered by Non-Tariff Barriers in the US Market, by Product Group [a]
(Hard-core NTB coverage ratios in parentheses)

Country	Foods & Feeds	Agricultural Materials	Coal & Petroleum	Ores & Metals	Manufactured Goods	Textiles & Clothing	Nonelectric Machinery	Electrical Machinery	Transport Equipment	ALL GOODS
Bulgaria	7.5 (0.1)	0.0 (0.0)	100.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	36.0 (0.1)
Czechoslovakia	12.5 (0.7)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	22.0 (10.9)	72.5 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	18.7 (8.2)
Hungary	16.7 (1.4)	92.7 (92.7)	0.0 (0.0)	0.0 (0.0)	29.8 (16.1)	48.5 (48.5)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	25.2 (12.1)
Poland	1.7 (1.2)	70.4 (70.4)	0.0 (0.0)	0.0 (0.0)	37.4 (37.3)	78.1 (78.1)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	15.7 (15.4)
Romania	15.6 (1.8)	38.8 (38.8)	100.0 (0.0)	0.0 (0.0)	50.1 (37.0)	90.7 (90.7)	12.0 (0.0)	0.0 (0.0)	0.0 (0.0)	72.3 (16.3)
EE5	7.0 (1.2)	61.1 (61.1)	99.9 (0.0)	0.0 (0.0)	40.0 (29.0)	77.2 (73.4)	7.2 (0.0)	0.0 (0.0)	0.0 (0.0)	49.9 (14.3)
FSU	79.5 (0.0)	92.9 (92.9)	100.0 (0.0)	0.0 (0.0)	74.3 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	56.7 (3.4)
NICs [b]	10.7 (3.5)	8.4 (8.4)	91.9 (0.0)	5.6 (0.0)	28.9 (24.6)	87.6 (87.2)	32.6 (0.0)	0.0 (0.0)	68.6 (68.6)	28.4 (23.6)
LDCs [b]	20.9 (4.7)	9.7 (3.7)	96.8 (0.0)	6.9 (0.0)	34.3 (21.6)	82.6 (81.4)	6.2 (1.2)	22.7 (9.5)	4.7 (0.1)	39.7 (14.9)
World	35.5 (8.8)	15.3 (1.2)	86.5 (0.0)	6.6 (0.0)	34.7 (17.6)	68.4 (67.2)	15.6 (2.2)	23.7 (2.7)	68.1 (37.5)	36.2 (14.1)

Source: UNCTAD Data Base on Trade Control Measures.

Notes:
(a) The coverage ratios were computed using 1989 NTB data against 1986 trade flows. Hardcore NTBs are mainly quantitative restrictions, flexible import fees or variable levies. The product groups listed here are standard UN aggregates defined in SITC Rev. 1 as follows: Foods & Feeds (0+1+22+4), Agricultural Materials (2-27-28), Coal and Petroleum (3), Ores and Metals (27+28+68), Manufactured Goods (5+6+7+8-68), Textiles and Clothing (26+65+84), Nonelectric Machinery (71), Electrical Machinery (72), Transport Equipment (73).
(b) "NICs" include China, Hong Kong (China), South Korea and Singapore. "LDCs" are all countries except OECD members, the East European Five and the FSU.

C. Improvements in Market Access and Prospects

The end of the Cold War is drastically changing the West's treatment of EE and the FSU in trade matters. By the beginning of 1991, the EC had extended GSP privileges to all EE countries (Table 9).[23] The EC also abolished the specific quantitative restrictions applied to these countries, and temporarily suspended (until the end of 1991) all remaining quotas -- except in the Portuguese and Spanish markets (ECE, 1991). Textile and steel products and agriculture were, however, excluded from these actions and were addressed separately. More flexible bilateral quota arrangements for textiles and clothing were concluded in 1990 and 1991 with all EE countries and the FSU.[24] Imports of steel and pig iron originating in EE and the FSU were considerably liberalized, although some EC members, notably the Benelux countries, Germany and Italy, still maintain quantitative restrictions (ECE 1991).

In the US, the MFN status was restored to Poland in 1989. Czechoslovakia was granted MFN status in 1990, and legislation to do the same for Bulgaria and the FSU is before the US Congress. Currently, Czechoslovakia, Hungary and Poland enjoy GSP benefits in the US, and these schemes were recently improved. Bilateral textile quotas under the MFA are being negotiated with Czechoslovakia, Hungary and Poland, which will be presumably relatively lax. Moreover, under its Trade Enhancement Initiative for Central and Eastern Europe, the US intends to further improve their access to its markets. For example, the "voluntary export restraints" in steel will presumably be eliminated in 1992 (ECE, 1991).

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[23] In December 1991, the FSU was still considered a state trading country and excluded from the GSP.

[24] "Swing" or transfers from one category to another were increased to 25 percent for the EE countries, and to 13.5 percent for the FSU. Transfers from one region to another region of the EC were also allowed up to 24 percent of the import quotas.

Some EFTA countries also recently improved market access for EE and the FSU. Austria granted GSP status to Hungary and Poland; and Finland, Norway, Sweden and Switzerland extended such treatment to Bulgaria and Romania. Nevertheless, in textiles (except Sweden), steel, and agriculture, most EFTA countries continue to apply NTBs to EE and the FSU.

The most important development in market access will come about with the Associate Membership of Czechoslovakia, Hungary and Poland in the EC and their free trade agreements with EFTA, both in the final stages of negotiation. These agreements will imply elimination of all tariffs and NTBs on manufactured exports of Czechoslovakia, Hungary and Poland in the EC and EFTA markets, with exception of the textiles and steel sectors. [25] The current negotiations are centered on transitionary arrangements for these two sectors (and agriculture). In textiles and clothing, it is believed that an accelerated phaseout of the quotas -- in half the period which is envisaged for the general MFA phaseout under the GATT negotiations (10 years) -- is being considered.

When the agreements with the EC and EFTA are concluded, Czechoslovakia, Hungary and Poland -- the EE countries which have the greatest supply potential of manufactures in the short- and medium-run -- will likely be the "most favored outsiders" in the largest global market, i.e., the European Economic Space.

V. Vulnerability of Exporters to the FSU in Manufactures

If the Republics of the FSU are obliged to limit their imports in the immediate future, which countries would suffer most in terms of their manufactured exports?

Table 14 lists the major exporters of manufactures to the FSU in descending order of their absolute value of manufactured exports to this destination. Seven countries were above US$1 billion. However, the FSU had a significant share only in Finland, Yugoslavia and India: 17, 21 and 13 percent,

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[25] See, e.g., Tovias and Laird (1991) concerning Hungary's expected status in the EC.

respectively. For the others, the share was less than 2 percent. Down the list, in 17th place, came Egypt, with about US$215 million, and in 19th place, Algeria with US$113 million. However, the share of the FSU in the latter two countries' manufactured exports was 21 and 33 percent, respectively.

Table 15 ranks the exporters of manufactures to the FSU by the importance of this market for the supplier. Furthermore, for each exporter, "the important sub-sectors" -- defined as two-digit SITC groups in which the FSU received at least ten percent of the exports -- are shown. In addition to the countries listed in Table 14, Syria, Uruguay and Pakistan are found in Table 15 owing to their high manufactured export shares to the FSU (23, 10, and 3 percent, respectively). Of this group, Pakistan has the largest trade with US$83 million.

Table 14: Major Exporters of Manufactures to the FSU (Ranked in descending order of the value of trade)

Exporter	Manufactures Exports to the FSU (M US$)	FSU's Share in Suppliers' Manufactured Exports (%)
Germany, Federal Republic	5,054.4	1.7
Japan	3,064.1	1.2
Finland	3,005.8	16.5
Yugoslavia	2,244.0	21.1
Italy	2,015.1	1.7
France	1,433.3	1.1
India	1,287.2	12.8
Austria	834.9	3.0
United Kingdom	752.9	0.6
China	615.3	1.9
Switzerland	550.2	1.1
USA	524.8	0.2
Belgium-Luxembourg	416.6	0.6
Netherlands	283.5	0.4
Sweden	255.0	0.6
Spain	232.5	0.8
Egypt	214.9	21.1
Turkey	140.1	1.8
Algeria	113.3	33.0
Denmark	113.0	0.6

Source: UNSO COMTRADE Data Base.

Note: 1988-1990 average, or the latest available year. CMEA members and countries whose manufactures trade with the FSU was less than US$100 million are excluded from this ranking. Manufactures are defined as SITC 5 through 9.

Table 15: Exporters of Manufactures to the FSU and their Most Important Exports by Sub-Sector (a)
(Ranked in descending order of the FSU's share in supplier's manufactured exports)

Exporter	FSU's Share in Supplier's Manufactured Exports (Percent)	Value of All Manufactured Exports to FSU ('000 US$)	Number of Important Sub-Sectors (b)	Most Important Sub-Sectors (c) (Two-digit SITC)	Exports to FSU ('000 US$)	FSU's Share of Exports (Percent)
ALGERIA	33.0	113,333	12	53 DYES,TANNING,COLOUR PROD	4,339	95.7
				77 ELECTRIC MACHNRY NES ETC	15,918	90.6
				69 METAL MANUFACTURES NES	7,177	83.8
				65 TEXTILE YARN,FABRICS,ETC	15,018	77.8
				74 GENRL INDUSTRL MACHY NES	14,721	71.3
				72 MACHS FOR SPCL INDUSTRYS	36,738	69.8
				85 FOOTWEAR	528	60.8
				55 PERFUME,CLEANING ETC PRD	954	36.1
				68 NON-FERROUS METALS	7,950	29.5
				89 MISC MANUFCTRD GOODS NES	897	27.1
SYRIA	22.9	20,923	37	71 POWER GENERATING EQUIPMT	206	48.0
				75 OFFICE MACHNES,ADP EQUIP	136	47.7
				76 TELECOMM,SOUND EQUIPMENT	396	47.5
				54 MEDICINAL,PHARM PRODUCTS	26	41.3
				89 MISC MANUFCTRD GOODS NES	2,363	41.0
				74 GENRL INDUSTRL MACHY NES	325	40.0
				53 DYES,TANNING,COLOUR PROD	17	39.5
				59 CHEMICAL MATERIALS NES	69	39.0
				77 ELECTRIC MACHNRY NES ETC	574	37.9
YUGOSLAVIA	21.1	2,244,028	23	73 METALWORKING MACHINERY	219,319	70.3
				85 FOOTWEAR	294,695	59.7
				72 MACHS FOR SPCL INDUSTRYS	156,730	52.7
				83 TRAVEL GOODS,HANDBAGS	4,084	50.1
				74 GENRL INDUSTRL MACHY NES	318,272	47.7
				79 OTHR TRANSPORT EQUIPMENT	245,765	47.0
				55 PERFUME,CLEANING ETC PRD	23,658	41.4
				76 TELECOMM,SOUND EQUIPMENT	52,902	41.0
				75 OFFICE MACHNES,ADP EQUIP	11,117	31.8
EGYPT	21.1	214,857	7	55 PERFUME,CLEANING ETC PRD	30,967	92.6
				82 FURNITURE,PARTS THEREOF	14,520	88.6
				61 LEATHER,DRESSED FUR,ETC	1,036	36.0
				65 TEXTILE YARN,FABRICS,ETC	158,369	31.9
				63 WOOD,CORK MANUFACTRS NES	503	31.2
				83 TRAVEL GOODS,HANDBAGS	208	15.6
				84 CLOTHING AND ACCESSORIES	8,798	13.1
FINLAND	16.5	3,005,777	23	79 OTHR TRANSPORT EQUIPMENT	772,200	63.9
				85 FOOTWEAR	86,747	63.4
				84 CLOTHING AND ACCESSORIES	185,728	30.8
				54 MEDICINAL,PHARM PRODUCTS	25,249	29.9
				69 METAL MANUFACTURES NES	81,260	24.4
				76 TELECOMM,SOUND EQUIPMENT	160,329	24.3
				73 METALWORKING MACHINERY	21,119	23.5
				74 GENRL INDUSTRL MACHY NES	193,778	22.0
				53 DYES,TANNING,COLOUR PROD	46,316	19.6
				72 MACHS FOR SPCL INDUSTRYS	212,282	18.0
INDIA	12.8	1,287,193	23	75 OFFICE MACHNES,ADP EQUIP	84,003	76.7
				77 ELECTRIC MACHNRY NES ETC	144,370	66.4
				55 PERFUME,CLEANING ETC PRD	62,554	56.0

				59 CHEMICAL MATERIALS NES	31,276	52.1
				54 MEDICINAL,PHARM PRODUCTS	85,704	33.7
				53 DYES,TANNING,COLOUR PROD	54,265	31.6
				74 GENRL INDUSTRL MACHY NES	26,975	30.0
				73 METALWORKING MACHINERY	18,665	29.7
				72 MACHS FOR SPCL INDUSTRYS	45,284	29.1
				81 PLUMBG,HEATNG,LGHTNG EQU	2,256	26.9
URUGUAY	4.3	23,623	1	61 LEATHER,DRESSED FUR,ETC	22,791	17.8
AUSTRIA	3.0	834,899	4	79 OTHR TRANSPORT EQUIPMENT	96,892	29.2
				53 DYES,TANNING,COLOUR PROD	35,202	21.4
				67 IRON AND STEEL	394,462	16.7
				73 METALWORKING MACHINERY	46,264	10.8
PAKISTAN	2.8	83,225	0	84 CLOTHING AND ACCESSORIES	51,889	8.3
				65 TEXTILE YARN,FABRICS,ETC	29,962	1.7

Source: UNSO COMTRADE Data Base.

Notes: (a) 1988-90 average or latest available year. CMEA members are excluded from this ranking. Manufactures are defined as SITC 5 through 9.
(b) The "Number of Important Sub-Sectors" is the number of two-digit SITC groups in which the FSU accounted for at least ten percent of exports.
(c) When there were more than ten important sectors, only the top ten were listed.

From these tentative observations, we can conclude that Yugoslavia, Finland, India, and to a lesser extent, Algeria and Egypt are vulnerable to a collapse of the FSU market in manufactures. It is also noteworthy that the exports of India, for example, contain considerable amounts of investment goods which will likely be cut back in the current crisis.

Finally, the collapse of the FSU market would have indirect consequences for global trade in manufactures. The FSU is not a significant market for the major trading countries taken individually. However, total OECD exports of manufactures to this country were about US$20 billion in 1990,[26] a significant amount, especially at a time when the major OECD countries have extremely modest growth rates.[27] More importantly, OECD exports redirected to other markets would imply increased competition for third parties, including some developing countries, and especially the NICs. This increased competition in poorer markets could also be less than fair as the officially supported export credits with low interest rates would come into play.[28]

VI. Conclusions

The paper reaches four conclusions on the future direction and level of trade of the EE economies. First, the expansion in EE exports to the West, to some extent at the expense of trade with the FSU should be viewed as a step towards the normalization of the trade patterns of these countries. They will end up having a considerably smaller portion of their manufactures trade with each other and particularly with the FSU. Second, while Western Europe will be their major trading partner, in terms of growth rates their trade with North America and Japan, especially on the import side, may increase dramatically from a small base. The same dramatic change may take place in their trade with the

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[26] OECD, excluding Turkey.

[27] Total OECD exports to the FSU in 1990 were US$26 billion. Most OECD countries continue extending official credits to back up their agricultural sales.

[28] The OECD "Consensus" on officially supported export credits allows loans with considerably lower than market interest rates to poorer countries.

developing countries, in both imports and exports. **Third,** the overall volume of EE trade should increase four- to six-fold as the income levels in EE catch up with the industrial market economies. **Fourth,** the EE countries can be expected to expand their exports of relatively lower income goods. In turn, we predict that they would be importing more in higher income goods.

Finally, it is worth noting that the West has responded very substantially in improving the market access of the EE countries. While they were unfavorably treated compared to any country group during the Cold War, now they will be enjoying equal or even favorable treatment. In particular, Czechoslovakia, Hungary and Poland -- the EE countries with the greatest supply potential of manufactures in the intermediate-term -- will likely become the "most favored outsiders" in the European Economic Space, the largest single market in the world.

The implications of these developments are indeed **promising** for the EE countries. The longer-term **global** efficiency, growth and welfare implications of these changes are also unquestionably positive and extremely important. In the meantime, however, a large number of developing countries, which basically rely on manufactures for export revenues, will have **tougher times** in major Western markets. In particular, the Mediterranean associates of the EC, notably Turkey, are among those countries which will experience an erosion of their preferential status. Except in textiles and clothing, the "older" NICs will probably be affected only in a limited manner owing to the fact that they have already moved up the scale in the sophistication of their manufactured exports.

There is however, a **bright side** to the story for developing countries, even in the shorter-term. The emancipation of EE and the FSU provides important opportunities for the dynamic developing countries. EE and the FSU need all sorts of consumer goods to satisfy a deprived population. While OECD countries, and to some extent the NICs, will be providing the more sophisticated goods and high-tech products, including capital equipment, the lower income developing countries also will have a lot to offer.

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ANNEX

PART A: DATA SOURCES AND DESCRIPTION

Below is a description of the data used in estimating the gravity equations. The authors are grateful to Oleh Havrylyshyn and Lant Pritchett for providing most of these data.

Trade

T is the average annual 1980-1982 US$ value of manufactures (SITC 5 through 9) imports or exports. These data were extracted from the UNSO COMTRADE data base.

Geography

Distance is the straightline distance between the economic centers of gravity of the respective countries, from Linneman (1966).

Border is equal to one if the countries share a border, zero otherwise.

Economic Activity

GDP is US$ GDP taken from the World Bank Atlas. The Atlas method uses a conversion factor other than the official rate when the latter is wildly distorted.

GDPPC is US$ GDP per capita from the World Bank Atlas.

Area is the land area in thousand square kilometers.

Island is equal to one if the country is an island, zero otherwise.

Trade preference arrangements

Region is equal to one if both countries are party to a preferential trading arrangement, zero otherwise. The arrangements included (depending on the sample) are: ASEAN, CACM, EEC and LAFTA.

Cultural

Language is equal to one if both countries share a common language. The languages included are: Arabic, English, Portuguese and Spanish.

The Sample

The partner countries used in both samples are 95 non-socialist economies with total imports of at least $300 million in 1980. Please see the text for a description of the reporter countries in each sample.

PART B: OPENNESS ESTIMATION RESULTS

Table 1: OLS regression results using ratio of manufactures exports to GDP as dependent variable and 21 middle-income economies as sample

Constant	0.34906
Std Err of Y Est	0.07728
R Squared	0.86711
No. of Observations	1995
Degrees of Freedom	1987

Independent Variable	Coefficient	Standard Error
LIGDPI	0.01934	0.00422
LISHPOPI	0.04376	0.00451
LILSIZEI	-0.07073	0.00215
IDLAFTA	0.00226	0.00851
IDEEC	-0.03285	0.01970
IDASEAN	0.15429	0.03870
XTHRESH	0.39777	0.00685

Table 2: OLS regression results using ratio of manufactures imports to GDP as dependent variable and 21 middle-income economies as sample

Constant	0.52279
Std Err of Y Est	0.09447
R Squared	0.80441
No. of Observations	1995
Degrees of Freedom	1987

Independent Variable	Coefficient	Standard Error
LIGDPI	0.03029	0.00482
LISHPOPI	-0.03243	0.00552
LILSIZEI	-0.05014	0.00226
IDLAFTA	0.00279	0.01042
IDEEC	0.06850	0.02407
IDASEAN	0.11789	0.04747
MTHRESH	0.25665	0.00622

Table 3: OLS regression results using ratio of manufactures exports to GDP as dependent variable and 14 semi-industrial economies as sample

Constant	0.46246
Std Err of Y Est	0.05850
R Squared	0.86830
No. of Observations	1330
Degrees of Freedom	1322

Independent Variable	Coefficient	Standard Error
LIGDPI	0.00510	0.00309
LISHPOPI	0.01536	0.00333
LILSIZEI	-0.06210	0.00198
IDLAFTA	-0.01261	0.00964
IDEEC	-0.03780	0.01491
IDASEAN	0.04856	0.02086
XTHRESH	0.29524	0.00514

Table 4: OLS regression results using ratio of manufactures imports to GDP as dependent variable and 14 semi-industrial economies as sample

Constant	0.53175
Std Err of Y Est	0.08393
R Squared	0.81910
No. of Observations	1330
Degrees of Freedom	1322

Independent Variable	Coefficient	Standard Error
LIGDPI	-0.00660	0.00464
LISHPOPI	0.01249	0.00475
LILSIZEI	-0.05378	0.00259
IDLAFTA	-0.00893	0.01387
IDEEC	0.09410	0.02130
IDASEAN	0.09274	0.02993
MTHRESH	0.30695	0.00598

PART C: DIRECTION OF TRADE ESTIMATION RESULTS

Table 1: Regression results using imports of manufactures as dependent variable and 21 middle-income economies as sample

Least Squares Estimates

Dependent Variable	LIMIJ	Number of Observations	1995
Mean of Dep. Var.	5.023183	Std. Dev. of Dep. Var.	4.489761
Std. Error of Regr.	2.646801	Sum of Sqrd. Residuals	13842.978599
R - squared	.655604	Adjusted R - Squared	.652467

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	2.17404	.369843	5.878	.00000	1.0000	.00000
LIDSTIJ	-1.40387	.107519	-13.057	.00000	1.6130	.72794
IBORDER	.542119	.437564	1.239	.21536	.28571E-01	.16664
LIGDPI	.633216	.102380	6.185	.00000	3.1818	1.2368
LIGDPP	1.84394	.541902E-01	34.027	.00000	2.9132	1.7831
LIGDPPCI	.405022	.169420	2.391	.01682	.72573	.46445
LIGDPPCP	.151867	.751266E-01	2.021	.04323	.57665	1.3393
IDEEC	.442396	.694193	.637	.52394	.80201E-02	.89217E-01
IDLAFTA	1.56199	.375213	4.163	.00003	.45113E-01	.20760
IDASEAN	.587893	1.38597	.424	.67144	.20050E-02	.44744E-01
IENGLISH	.919451	.614992	1.495	.13490	.10025E-01	.99647E-01
ISPANISH	1.97077	.274779	7.172	.00000	.93734E-01	.29153
IPORTUG	1.38698	1.32892	1.044	.29663	.20050E-02	.44744E-01
IARABIC	1.09661	.514697	2.131	.03312	.15038E-01	.12173
ISHADYPC	-.508666E-01	.230646E-01	-2.205	.02743	3.1390	3.1142
LILSIZEI	-.113576	.760703E-01	-1.493	.13543	5.5995	1.5979
LILSIZEP	-.435804	.400367E-01	-10.877	.00000	5.4767	1.9870
ILISLDI	1.06461	.231770	4.593	.00000	.14286	.35001
IISLDP	.362611	.167369	2.167	.03027	.19850	.39897

Maximum Likelihood Estimates (TOBIT)

Log-Likelihood..... -4073.2

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	.413384	.496544	.833	.40511	1.0000	.00000
LIDSTIJ	-1.58632	.139241	-11.393	.00000	1.6130	.72794
IBORDER	.641652	.553652	1.159	.24648	.28571E-01	.16664
LIGDPI	.963777	.138238	6.972	.00000	3.1818	1.2368
LIGDPP	2.36367	.749523E-01	31.536	.00000	2.9132	1.7831
LIGDPPCI	.693233	.228115	3.039	.00237	.72573	.46445
LIGDPPCP	.170335	.100747	1.691	.09089	.57665	1.3393
IDEEC	-.563212	.876737	-.642	.52062	.80201E-02	.89217E-01
IDLAFTA	1.40281	.474321	2.958	.00310	.45113E-01	.20760
IDASEAN	.390120	1.74663	.223	.82326	.20050E-02	.44744E-01
IENGLISH	1.23961	.792240	1.565	.11765	.10025E-01	.99647E-01
ISPANISH	3.14017	.354262	8.864	.00000	.93734E-01	.29153
IPORTUG	1.77814	1.71228	1.038	.29905	.20050E-02	.44744E-01
IARABIC	2.05000	.664886	3.083	.00205	.15038E-01	.12173
ISHADYPC	-.864276E-01	.306542E-01	-2.819	.00481	3.1390	3.1142
LILSIZEI	-.240531	.102292	-2.351	.01870	5.5995	1.5979
LILSIZEP	-.605990	.533566E-01	-11.357	.00000	5.4767	1.9870
ILISLDI	1.31088	.306765	4.273	.00002	.14286	.35001
IISLDP	.443514	.221312	2.004	.04507	.19850	.39897
σ	3.32938	.665152E-01	50.054	.0000		

Table 2: Regression results using imports of manufactures as dependent variable and 14 semi-industrial economies as sample

Least Squares Estimates

Dependent Variable	LIMIJ	Number of Observations	1330
Mean of Dep. Var.	5.493570	Std. Dev. of Dep. Var.	4.451488
Std. Error of Regr.	2.772533	Sum of Sqrd. Residuals	10077.578002
R - squared	.617333	Adjusted R - Squared	.612079

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	1.88051	.522475	3.599	.00032	1.0000	.00000
LIDSTIJ	-1.05809	.131086	-8.072	.00000	1.5830	.70121
IBORDER	-.426024	.569379	-.748	.45432	.25564E-01	.15789
LIGDPI	.790646	.120352	6.569	.00000	3.7083	1.0262
LIGDPP	1.84955	.697711E-01	26.509	.00000	2.9076	1.7830
LIGDPPCI	-.990499E-01	.174009	-.569	.56920	.90250	.60032
LIGDPPCP	.105348	.934901E-01	1.127	.25981	.57479	1.3385
IDEEC	1.04796	.727471	1.441	.14971	.12030E-01	.10906
IDLAFTA	2.01021	.556216	3.614	.00030	.30075E-01	.17086
IDASEAN	2.21506	1.04868	2.112	.03467	.60150E-02	.77352E-01
IENGLISH	1.25338	.640881	1.956	.05050	.15038E-01	.12175
ISPANISH	1.34514	.410080	3.280	.00104	.51128E-01	.22034
IPORTUG	.944581	1.39301	.678	.49772	.30075E-02	.54779E-01
IARABIC	-.937295E-01	.748909	-.125	.90040	.11278E-01	.10564
ISHADYPC	-.511280E-01	.282979E-01	-1.807	.07080	3.3222	3.0526
LILSIZEI	-.146704	.951791E-01	-1.541	.12323	5.6807	1.4719
LILSIZEP	-.410925	.515139E-01	-7.977	.00000	5.4759	1.9882
ILISLDI	.518739	.248054	2.091	.03651	.14286	.35006
IISLDP	.108142	.217682	.497	.61934	.19850	.39902

Maximum Likelihood Estimates (TOBIT)

Log-Likelihood..... -2940.0

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	.899480	.650426	1.383	.16669	1.0000	.00000
LIDSTIJ	-1.08914	.160483	-6.787	.00000	1.5830	.70121
IBORDER	-.372943	.689063	-.541	.58835	.25564E-01	.15789
LIGDPI	1.00517	.151708	6.626	.00000	3.7083	1.0262
LIGDPP	2.16734	.881077E-01	24.599	.00000	2.9076	1.7830
LIGDPPCI	-.111740	.218105	-.512	.60843	.90250	.60032
LIGDPPCP	.110293	.115853	.952	.34109	.57479	1.3385
IDEEC	.685357	.875976	.782	.43398	.12030E-01	.10906
IDLAFTA	2.23842	.671386	3.334	.00086	.30075E-01	.17086
IDASEAN	2.56435	1.26306	2.030	.04233	.60150E-02	.77352E-01
IENGLISH	1.62835	.785639	2.073	.03820	.15038E-01	.12175
ISPANISH	1.81507	.498464	3.641	.00027	.51128E-01	.22034
IPORTUG	1.09457	1.71185	.639	.52256	.30075E-02	.54779E-01
IARABIC	.148882	.950750	.157	.87556	.11278E-01	.10564
ISHADYPC	-.690041E-01	.347906E-01	-1.983	.04732	3.3222	3.0526
LILSIZEI	-.250774	.119872	-2.092	.03644	5.6807	1.4719
LILSIZEP	-.514593	.639710E-01	-8.044	.00000	5.4759	1.9882
ILISLDI	.501866	.309396	1.622	.10479	.14286	.35006
IISLDP	.238707E-02	.270401	.009	.99296	.19850	.39902
σ	3.33184	.776335E-01	42.918	.0000		

Table 3: Regression results using exports of manufactures as dependent variable and 21 middle-income economies as sample

Least Squares Estimates

Dependent Variable	LIXIJ	Number of Observations	1995
Mean of Dep. Var.	5.324202	Std. Dev. of Dep. Var.	4.244180
Std. Error of Regr.	2.555468	Sum of Sqrd. Residuals	12897.572498
R - squared	.640917	Adjusted R - Squared	.637462

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	1.73481	.357824	4.848	.00000	1.0000	.00000
LIDSTIJ	-1.49635	.104206	-14.360	.00000	1.6130	.72794
IBORDER	.832559	.424682	1.960	.04995	.28571E-01	.16664
LIGDPI	1.96893	.988933E-01	19.910	.00000	3.1818	1.2368
LIGDPP	1.10328	.523217E-01	21.087	.00000	2.9132	1.7831
LIGDPPCI	.191784	.163602	1.172	.24109	.72573	.46445
LIGDPPCP	.495646E-01	.725347E-01	.683	.49440	.57665	1.3393
IDEEC	1.13475	.670309	1.693	.09048	.80201E-02	.89217E-01
IDLAFTA	1.62179	.364688	4.447	.00001	.45113E-01	.20760
IDASEAN	-.946792	1.33934	-.707	.47962	.20050E-02	.44744E-01
IDCACM	4.19983	1.32033	3.181	.00147	.20050E-02	.44744E-01
IENGLISH	2.82958	.593771	4.765	.00000	.10025E-01	.99647E-01
ISPANISH	1.84145	.266766	6.903	.00000	.93734E-01	.29153
IPORTUG	4.41034	1.28306	3.437	.00059	.20050E-02	.44744E-01
IARABIC	1.30957	.497425	2.633	.00847	.15038E-01	.12173
ISHADYPC	.314621E-01	.222691E-01	1.413	.15771	3.1390	3.1142
LILSIZEI	-.590167	.734515E-01	-8.035	.00000	5.5995	1.5979
LILSIZEP	-.214659	.386842E-01	-5.549	.00000	5.4767	1.9870
ILISLDI	2.85590	.223822	12.760	.00000	.14286	.35001
IISLDP	-.610777E-01	.161597	-.378	.70546	.19850	.39897

Maximum Likelihood Estimates (TOBIT)

Log-Likelihood..... -4130.4

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	-.150136	.465986	-.322	.74731	1.0000	.00000
LIDSTIJ	-1.80810	.131497	-13.750	.00000	1.6130	.72794
IBORDER	.703754	.523980	1.343	.17924	.28571E-01	.16664
LIGDPI	2.65487	.130213	20.389	.00000	3.1818	1.2368
LIGDPP	1.39692	.688832E-01	20.279	.00000	2.9132	1.7831
LIGDPPCI	.451025	.211873	2.129	.03327	.72573	.46445
LIGDPPCP	.553207E-01	.945090E-01	.585	.55831	.57665	1.3393
IDEEC	.258304	.826269	.313	.75457	.80201E-02	.89217E-01
IDLAFTA	1.40336	.450882	3.112	.00186	.45113E-01	.20760
IDASEAN	-1.11326	1.64692	-.676	.49906	.20050E-02	.44744E-01
IDCACM	4.97830	1.62325	3.067	.00216	.20050E-02	.44744E-01
IENGLISH	3.24802	.731667	4.439	.00001	.10025E-01	.99647E-01
ISPANISH	2.74550	.336490	8.159	.00000	.93734E-01	.29153
IPORTUG	4.65423	1.57623	2.953	.00315	.20050E-02	.44744E-01
IARABIC	2.00841	.626709	3.205	.00135	.15038E-01	.12173
ISHADYPC	.359050E-01	.287147E-01	1.250	.21115	3.1390	3.1142
LILSIZEI	-.792960	.942767E-01	-8.411	.00000	5.5995	1.5979
LILSIZEP	-.310342	.500413E-01	-6.202	.00000	5.4767	1.9870
ILISLDI	3.08505	.281750	10.950	.00000	.14286	.35001
IISLDP	-.112500	.209783	-.536	.59177	.19850	.39897
σ	3.13851	.611924E-01	51.289	.0000		

Table 4: Regression results using exports of manufactures as dependent variable and 14 semi-industrial economies as sample

Least Squares Estimates

Dependent Variable	LIXIJ	Number of Observations	1330
Mean of Dep. Var.	6.830912	Std. Dev. of Dep. Var.	3.928572
Std. Error of Regr.	2.612039	Sum of Sqrd. Residuals	8944.625419
R - squared	.563918	Adjusted R - Squared	.557931

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	3.12577	.492231	6.350	.00000	1.0000	.00000
LIDSTIJ	-1.22288	.123497	-9.902	.00000	1.5830	.70121
IBORDER	-.252982	.536419	-.472	.63720	.25564E-01	.15789
LIGDPI	2.05471	.113385	18.122	.00000	3.7083	1.0262
LIGDPP	1.18314	.657323E-01	17.999	.00000	2.9076	1.7830
LIGDPPCI	-.371640	.163936	-2.267	.02339	.90250	.60032
LIGDPPCP	.906738E-01	.880782E-01	1.029	.30326	.57479	1.3385
IDEEC	.713127	.685360	1.041	.29810	.12030E-01	.10906
IDLAFTA	2.23882	.524018	4.272	.00002	.30075E-01	.17086
IDASEAN	1.79031	.987978	1.812	.06997	.60150E-02	.77352E-01
IENGLISH	2.44450	.603782	4.049	.00005	.15038E-01	.12175
ISPANISH	1.52249	.386342	3.941	.00008	.51128E-01	.22034
IPORTUG	3.73186	1.31238	2.844	.00446	.30075E-02	.54779E-01
IARABIC	1.68411	.705557	2.387	.01699	.11278E-01	.10564
ISHADYPC	.267059E-01	.266598E-01	1.002	.31648	3.3222	3.0526
LILSIZEI	-.789275	.896695E-01	-8.802	.00000	5.6807	1.4719
LILSIZEP	-.205898	.485319E-01	-4.243	.00002	5.4759	1.9882
ILISLDI	1.45856	.233695	6.241	.00000	.14286	.35006
IISLDP	-.233581	.205081	-1.139	.25472	.19850	.39902

Maximum Likelihood Estimates (TOBIT)

Log-Likelihood..... -3067.4

Variable	Coefficient	Std. Error	T-ratio	Prob|t|≥x	Mean of X	Std.D.of X
ONE	2.89202	.549115	5.267	.00000	1.0000	.00000
LIDSTIJ	-1.26950	.137294	-9.247	.00000	1.5830	.70121
IBORDER	-.350419	.594498	-.589	.55557	.25564E-01	.15789
LIGDPI	2.30660	.128827	17.905	.00000	3.7083	1.0262
LIGDPP	1.28051	.739157E-01	17.324	.00000	2.9076	1.7830
LIGDPPCI	-.535192	.184015	-2.908	.00363	.90250	.60032
LIGDPPCP	.859836E-01	.986857E-01	.871	.38360	.57479	1.3385
IDEEC	.654495	.757953	.864	.38786	.12030E-01	.10906
IDLAFTA	2.37628	.579658	4.099	.00004	.30075E-01	.17086
IDASEAN	1.89703	1.09295	1.736	.08262	.60150E-02	.77352E-01
IENGLISH	2.77048	.668256	4.146	.00003	.15038E-01	.12175
ISPANISH	1.74838	.427547	4.089	.00004	.51128E-01	.22034
IPORTUG	3.90030	1.45074	2.688	.00718	.30075E-02	.54779E-01
IARABIC	2.02706	.784447	2.584	.00976	.11278E-01	.10564
ISHADYPC	.207566E-01	.297633E-01	.697	.48556	3.3222	3.0526
LILSIZEI	-.923003	.100862	-9.151	.00000	5.6807	1.4719
LILSIZEP	-.237825	.543952E-01	-4.372	.00001	5.4759	1.9882
ILISLDI	1.44240	.260571	5.536	.00000	.14286	.35006
IISLDP	-.265673	.229746	-1.156	.24753	.19850	.39902
σ	2.88713	.621701E-01	46.439	.0000		

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